CLAIMS

1. A photomask having a pattern formed on a substrate composed of a material permeating exposing light by providing light-shielding portions using a material that shields said exposing light,

said pattern comprising:

a central pattern portion having a plurality of line patterns formed leaving a predetermined distance on the central portion of said substrate; and

a peripheral pattern portion formed in the vicinity of the peripheral portion of said substrate so as to surround said central pattern portion.

2. The photomask according to claim 1, wherein the line width of each of said line patterns is λ/NA or more,

where λ is the wavelength of the exposing light of the exposing apparatus used for transferring the patterns, and NA is the numerical aperture of the projection lens.

3. The photomask according to claim 1, wherein the length of said line pattern is 10 μm or more.

4. The photomask according to claim 1, wherein the number of said line patterns is 9.

5. The photomask according to claim 1, wherein

said photomask further comprises an open portion wherein no light-shielding portion is formed;

said open portion is disposed so as to surround said central portion; and

said peripheral pattern portion is disposed so as to surround said open portion.

6. The photomask according to claim 5, wherein:

said open portion has a width equal to or larger than a threshold value, wherein:

said threshold value is the value of width of said open portion at the time when the line width of transferred pattern corresponding to said line pattern in said central portion becomes constant despite widening of the width of said open portion.

7. A flare measuring mechanism comprising:

a first photomask comprising a first central pattern portion formed of a first line pattern on the central portion of a substrate, and a first peripheral pattern portion formed so as to surround said first central pattern portion;

a second photomask comprising a second central pattern portion formed of a second line pattern of the same shape as said first central pattern portion, and a second peripheral pattern portion formed so as to surround said second central pattern portion; and having the distance between said second central pattern portion and said second peripheral pattern portion different from the distance between said first central pattern portion and said first peripheral pattern portion; and

a calculation means for measuring a flare rate by transferring each pattern on said first and second photomasks, measuring the line width of each of patterns transferred first and second line pattern, and calculating the difference between the line width of the pattern corresponding to said first line pattern and the line width of the pattern corresponding to said second line pattern.

8. The flare measuring mechanism according to claim 7, wherein the distance between said second central pattern and said second peripheral pattern of said second photomask has the length of a threshold value or more, wherein

said threshold value is the value of the distance between said second central pattern and said second peripheral pattern at the time when the line width of transferred pattern corresponding to said line pattern in said central portion becomes constant despite widening of the distance between said second central pattern and said second peripheral pattern.

9. The flare measuring mechanism according to claim 7, wherein the line width of said first and second line patterns is λ/NA or more, where λ is the wavelength of exposing light used for transferring patterns, and NA is the numerical aperture of the projection lens.

10. The flare measuring mechanism according to claim 7, wherein the line length of said first and second line patterns is 10 μm or more.

11. The flare measuring mechanism according to claim 7, wherein the number of lines of said first and second line patterns is 9 or more.

12. The flare measuring mechanism according to claim 7, wherein said calculation means comprises a conversion table for converting the difference of each line width obtained on the basis of the measured results of line widths measured using said measurement means into the flare rate.

13. A flare measuring method comprising:

a first pattern transferring step for transferring the first pattern of the first photomask comprising said first pattern including a first central pattern portion having a first line pattern formed on the center of a substrate, and a first peripheral pattern portion formed around said first central pattern portion, onto the substrate;

a second pattern transferring step for transferring the second pattern of the second photomask comprising said second pattern including a second central pattern portion having a second line pattern same as said first line pattern formed on the center of a substrate, and a second peripheral pattern portion formed around said second central pattern portion, and having the distance between said second central pattern portion and said second peripheral pattern portion different from the distance between said first central pattern portion and said first peripheral pattern portion, onto the substrate;

a first line-width measuring step for measuring the line width of said first line pattern transferred onto the substrate in said first pattern transferring step;

a second line-width measuring step for measuring the line width of said second line pattern transferred onto the substrate in said second pattern transferring step; and

a calculating step for calculating the flare rate by obtaining the difference between the line width measured in said first line-width measuring step and the line width measured in said second line-width measuring step.

14. The flare measuring method according to claim 13, wherein

the distance between said second central pattern and said second peripheral pattern of said second photomask has the length of said threshold value or more, wherein

said threshold value is the value of the distance between said second central pattern and said second peripheral pattern at the time when the line width of transferred pattern corresponding to said line pattern in said central portion becomes constant despite widening of the distance between said second central pattern and said second peripheral pattern.

15. The flare measuring method according to claim 13, wherein the line width of said first and second line patterns is λ/NA or more, where λ is the wavelength of exposing light of the exposing apparatus used for transferring patterns, and NA is the numerical aperture of the projection lens.

16. The flare measuring method according to claim 13, wherein the line length of said first and second line patterns is 10 μm or more.

17. The flare measuring method according to claim 13, wherein the number of lines of said first and second line patterns is 9.

18. The flare measuring method according to claim 13, wherein said flare rate is calculated on the basis of data from the difference on said line widths.

19. The flare measuring method according to claim 13, wherein said first and second patterns are transferred onto different places of a wafer.

20. An exposing method comprising:

a step for inputting a flare rate;

a step for calculating difference in line width at a flare rate from said flare rate on the basis of 0% flare rate;

a step for calculating the corrected exposure from said difference in line width; and

a step for exposing while controlling exposure on the basis of said corrected exposure.